United States Patent

[11] 3,587,989

[72] Inventors **Don E. Fisher**
1525 Texar Drive, Pensacola, Fla. 32503;
William R. Osban, P.O. Box 465, 133
Shoreline Drive, Gulf Breeze, Fla. 32561

[21] Appl. No. **796,731**
[22] Filed **Feb. 5, 1969**
[45] Patented **June 28, 1971**

[54] **TRAVERSE GUIDE ASSEMBLY**
6 Claims, 5 Drawing Figs.

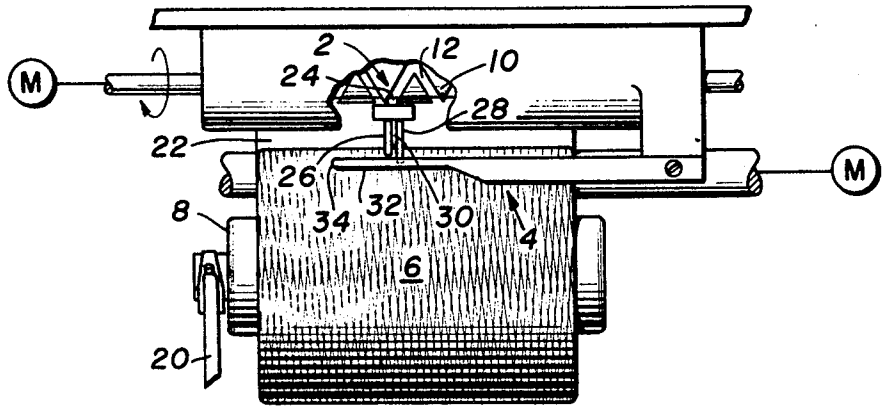
[52] **U.S. Cl.** **242/18,** 242/43
[51] **Int. Cl.** **B65h 54/28**
[50] **Field of Search** ..... 242/18, 18 (PW), 43

[56] **References Cited**
UNITED STATES PATENTS

2,244,492	6/1941	Karns	242/18(PW)UX
2,481,031	9/1949	McDermott	242/18(PW)
2,570,469	10/1951	McDermott	242/18(PW)

Primary Examiner—Stanley N. Gilreath
Attorney—Stanley M. Tarter

ABSTRACT: A textile traverse guide assembly including a reciprocating traverse guide having a stepped, bifurcate portion that interacts, cooperatively, with guide surfaces of a guide bar to effect an automatic laceup of a yarn into the traverse guide.



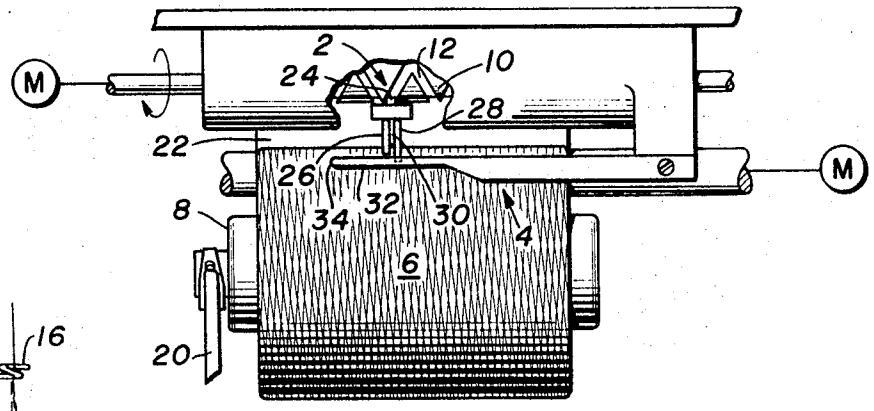


FIG. 1.

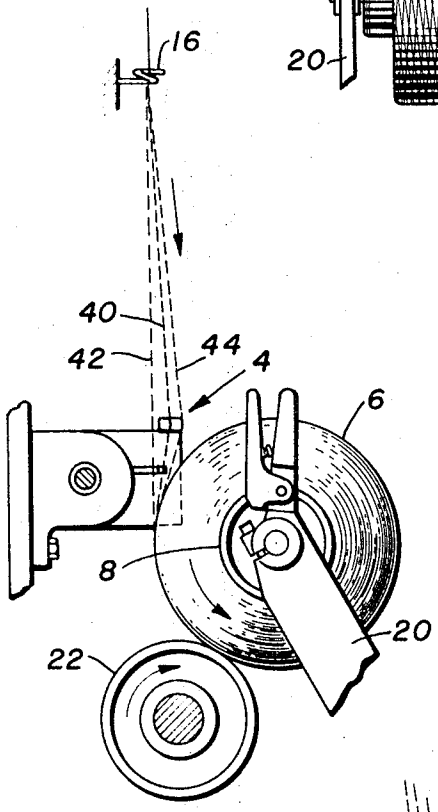


FIG. 2.

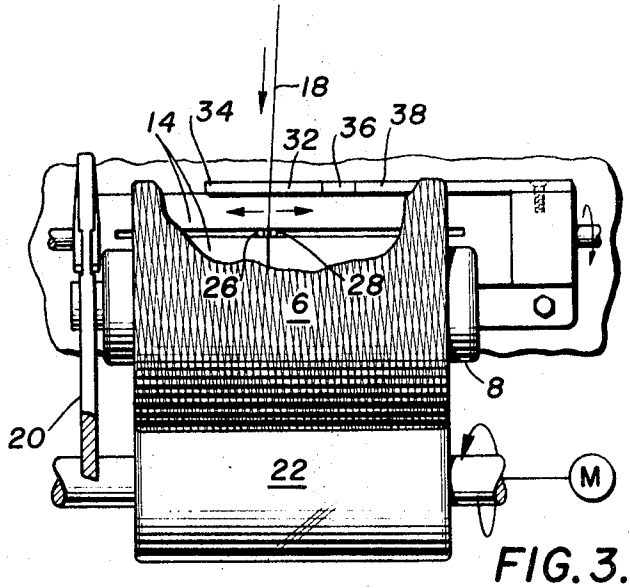


FIG. 3.

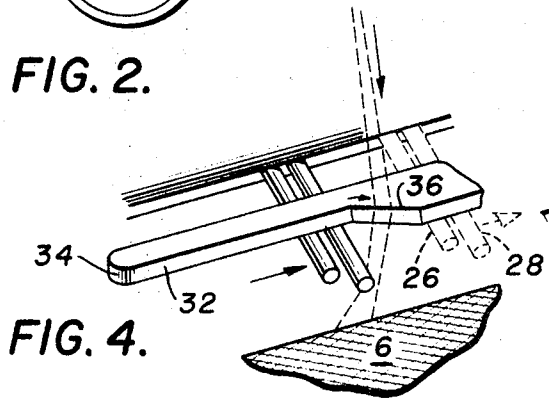


FIG. 4.

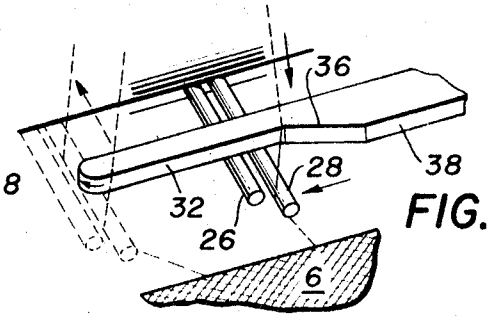


FIG. 5.

INVENTORS
D. E. FISHER
W. R. OSBAN
BY Alexander Kozel
AGENT

TRAVERSE GUIDE ASSEMBLY

BACKGROUND OF THE INVENTION

A common method of stringing up a yarn in a textile traverse-winding machine is to lace the yarn, normally being forwarded from a source thereof, around a bobbin while the latter is in a doff position pivoted away from the traverse device and drive roll components of the machine, and then to engage the bobbin with the drive roll to initiate winding of the yarn on the bobbin and, concurrently, to bring the yarn into the plane of reciprocation of a traverse guide. The common traverse guide is bifurcate in structure and has an open yarn slot. The traverse guide normally reciprocating at a high speed contacts the yarn, traveling substantially perpendicular to the plane of reciprocation of the traverse guide, causing the yarn to slide along the sloped sidewall of the traverse guide and to fall into the open slot of the guide.

As a result of the high rate of reciprocation of the traverse guide and the sudden pickup of the yarn by the guide, high stresses are imposed on the yarn. Also, the traverse guides wear rapidly and have a relatively short service life. The invention herein is designed to provide improved performance in the method of automatic laceup of a yarn and to provide a traverse device that is simple in construction, economical in production and durable in performance.

BRIEF DESCRIPTION OF THE INVENTION

The traverse guide assembly comprises a traverse guide and a traverse guide bar. The traverse guide is adapted to be reciprocated back and forth by a barrel cam roll, for example, while being constrained slidably between linear guide rails. The guide has a yarn-engaging, bifurcate guide portion with an open yarn slot defined between a short and a longer guide finger or member.

The guide bar is positioned adjacent the longitudinal plane of reciprocation of the ends of the traverse guide fingers and has a longitudinally extending guide surface terminating at one end of the bar and joining with an inclined or sloped yarn cam surface at its other end.

The organization and structure of the traverse guide fingers and guide bar are such that under one operative condition, when a yarn is laced to pass contactingly over the longitudinal guide surface of the bar, the long finger of the traverse guide contacts the yarn and traverses it to the end of the bar where the yarn slips into the traverse guide slot. Under another operative condition, the long finger of the traverse guide traverses the yarn along the longitudinal guide surface into contact with the camming surface causing the yarn to be cammed around and disengaged from the long finger and then to be reengaged by the long finger after the guide has made a reversal. The long finger carries the yarn to the end of the guide bar causing the yarn to be deposited into the traverse guide slot.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

FIG. 1 is a plan view of the traverse guide assembly of the invention, associated with a traverse winding apparatus,

FIG. 2 is a side elevation view of the traverse guide assembly,

FIG. 3 is an elevation view of the traverse guide assembly,

FIG. 4 is a perspective view illustrating the operation of the traverse guide assembly under one condition of operation, and

FIG. 5 is a perspective view illustrating the operation of the traverse guide assembly in another condition of operation.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring to the drawing, FIGS. 1—3, the traverse guide assembly consists of a traverse guide 2 and a guide stringup bar 4 shown in association with conventional yarn traverse winding components for forming a yarn package 6 on bobbin 8.

The conventional components comprise a driven barrel roll 10 having a helical cam groove 12 cut in the surface thereof; a pair of spaced guide rails 14 for controlling the traverse guide 2; a pigtail guide 16 for guiding a yarn 18 to the traverse winding components; a bobbin chuck including a pivotal swing arm 20 having a rotatable bobbin-mounting spindle at its upper end; and a drive roll 22 driven conventionally by motor means.

The traverse guide 2 has a pivotal follower 24 at its back side that mounts withing and slidably engages cam groove 12 of barrel roll 10, and has a pair of pins, 26 and 28 projecting from the front side thereof. Pins 26 and 28 define a slot 30 therebetween. Pin 26 is shorter in length than pin 28. The traverse guide 2 is slidably constrained between guide rails 14 to reciprocate linearly back and forth.

Stringup bar 4 extends longitudinally, parallel to the plane of reciprocation of traverse guide 2 and is positioned adjacent to the ends of pins 26 and 28, and preferably, above guide 2, Bar 4, along its frontal periphery, has a yarn guiding surface 32 extending longitudinally for a distance from a free, distal end 34 of bar 4 to join with a forwardly sloping cam surface 36. Preferably, a second linear yarn-guiding surface 38 extends from the forward end of sloping surface 36 providing a continuous stepped, guide controlling surface on the front side of bar 4. The distal free end 34 of bar 4 does not extend as far as the point of reversal of the traverse guide 2 at the left side of the traverse stroke as viewed in FIGS. 1 and 3. The short and long pins 26 and 28 are arranged so that the longer pin 28 is on the right side of traverse guide 2 and is the first to approach the free end 34 of bar 4 as the traverse guide 2 reciprocates rightwardly, as viewed in the drawing.

In operation, assume that a yarn 18, forwarded from pigtail guide 16, is laced around bobbin 8 and that the latter is pivoted into engagement with drive roll 22. Yarn 18 being tensioned will assume a course or path of travel, identified by reference numeral 40 in FIG. 2, to pass contactingly over guide surface 32 of bar. Pins 26 and 28 are constructed of predetermined differential lengths so that when traversing back and forth, the longer pin 28 will engage with yarn 18 when the latter is engaging guide surface 32 and is traveling in plane 40. If traverse guide 2 is moving from left to right, FIG. 4, the longer pin 28 will engage yarn 18 in plane 40 and will carry it rightwardly, slidingly along guide surface 32 until yarn 18 reaches sloping surface 36. When the longer pin 28 traverses past sloping surface 36, yarn 18 is cammed or carried up the sloped surface 36, by the interaction between pin 28 and the sloped surface 36, to a point where yarn 18 slides around the front tip of the longer pin 28 and slidably returns to engage guide surface 32. Meanwhile, traverse guide 2 completes its rightward stroke, reverses and moves leftwardly. Viewing FIG. 5, as traverse guide 2 travels leftwardly, the left side of pin 28 contacts yarn 18 and carries it leftwardly slidingly along guide surface 32 to the distal free end 34 of bar 4. At the free end 34 of bar 4, yarn 18 slides into slot 30 effecting an automatic yarn laceup. When positioned in slot 30 of traverse guide 2, yarn 18 assumes a plane of travel identified by reference numeral 42 in FIG. 2. The traverse and winding apparatus is arranged to keep the yarn 18 substantially in the plane of travel 42 during the packaging operation.

Sloping guide surface 36 extends sufficiently forward of the end of pin 28, or the end of pin 28 extends sufficiently back of the forward end of surface 36 to prevent the yarn 18 from being displaced upon guide surface 38 when it is cammed around the end of pin 28. Guide surface 38 is formed to be sufficiently forward of the free end of pin 28 so that when yarn 18 is passing over the guide surface 38 and assumes a plane of travel identified by reference numeral 44, FIG. 2, pin 28 will not engage with yarn 18. The guide surface 38 is provided to permit an operator to hold yarn 18 on the guide surface 38 to forestall an operation. If yarn 18 is first laced up to pass over guide surface 38 and is not restrained, the yarn 18 will drift toward guide surface 32 and an automatic laceup will take place.

It will be understood that the traverse guide **2** may be reciprocated by other than a barrel cam roll **10**. For example, the traverse guide **2** may be reciprocated pneumatically or by a belt, in which case the traverse guide **2** may have a different follower portion construction from that illustrated.

The important structure of the traverse guide **2** are the two stepped pins, **26** and **28**. The stem-pin structure permits making a lightweight yarn guide of durable material that is readily attachable to a traverse guide and which is relatively inexpensive to produce.

Although guide bar **4** is preferred in a position above the traverse guide **2**, the traverse assembly may be operable with the guide bar **4** positioned below the traverse guide **2**. The guide bar **4** need not necessarily be a bar but may be formed from a wire or rod.

We claim:

1. In a yarn traverse winding apparatus including a traverse device having a yarn guide for traversingly reciprocating a yarn, and means for collecting the yarn traversed by the yarn guide, the improvement wherein the yarn guide has a bifurcate portion of short and long stems defining a yarn slot therebetween, wherein a guide bar is aligned with and positioned adjacent the plane of traversal of said short and long stems, said guide bar having a distal end that terminates short of a reversal point of said yarn guide and having one guide surface to guide the yarn to the yarn collection means in a plane to permit said long stem of said yarn guide when traversing in one direction to contact the yarn and to move the yarn to said distal end of said bar to effect an automatic yarn laceup within said slot, and another sloped guide surface joined to said one guide surface to permit said long stem of said yarn guide when traversing in the opposite direction to cam the yarn around said long stem.

2. A traverse device comprising in combination,

a traverse guide having a bifurcate portion with spaced apart long and short members defining an open yarn slot therebetween,

means engaging said traverse guide for driving the latter in reciprocating back and forth strokes,

yarn stringup means positioned adjacent to said traverse guide for camming, in cooperation with said long member, yarn passing thereover around the end of said long member when the latter is driven in one direction, and for guiding the yarn into said slot when said long member is driven in the opposite direction.

3. A traverse device as in claim **2**, wherein said long and short members are pins.

4. A traverse device as in claim **2**, wherein said yarn stringup means is a bar having one end thereof terminating short of a reversal point of said traverse guide, having a yarn-engaging guide surface extending for a length from said one end for leading a yarn being traversed in one direction by said long member into said slot, and having a sloped cam surface joined at one end thereof to said guide surface for camming a yarn around the end of said long member when the latter is being driven in the opposite direction.

5. A traverse device as in claim **4**, wherein said guide surface is substantially linear and aligned with the path of the traversing strokes of said traverse guide, and said sloped cam surface joins with said linear guide surface and projects forwardly of the traversing path of said traverse guide.

6. A traverse device as in claim **4**, wherein said sloped cam surface has another guide surface joined thereto at its other end thereof for withholding a yarn passing thereover from the path of traversal of said long member of said traverse guide.